

REMARKS

The rejection of claims 1- 5, 7 - 18, 20 - 31 under 35 USC 102 and the rejection of claims 6, 19 under 35 USC 103 are respectfully traversed.

Applicants have amended claim 1, incorporating limitations from claims 2 and 3.

Applicants maintain that Dube does not show the limitation of claim 1 that the interpolation direction of a target pixel is determined (i.e. calculated based on pixel data).

Column 4, lines 34 - 44 of Dube discusses the pixel Z only in the context of interpolating along a 45 degree line, not in determining a direction to interpolate along.

Further, claim 1 requires that the horizontal and vertical correlation of the expanded data is reduced by a step of rank order processing in a window.

The examiner has asserted in paragraph a1) of the office action that the smoothing operation reduces correlation. Applicants' attorney has not been able to find support for this in the spec of Dube. For

example, there could be a smooth dependence in the X and Y directions that is highly correlated between X and Y (e.g. the same gradient from the line in question to the background in both X and Y).

Indeed, Dube states (Col. 7, lines 18,19) "Smooth commonly refers to a region having a high degree of correlation."

In addition, claim 1 requires that the first expanded image data and the second expanded image data are combined to generate a final image. Support is provided on page 36, Equation 7 of the spec, showing a formula for the combination using the parameter alpha.

Dube also does not show such an arithmetic combination of a first and second image.

With respect to claim 6, now merged with claim 5, the rejection under 35 USC 103 is respectfully traversed. Applicants maintain that the combination of the Dube reference and the Avinash reference is not proper.

Both references are in the field of image processing, but that is a very broad category. The Dube reference is concerned with expanding an image but the Avinash reference is not. Avinash shrinks the image (step 112 of Fig. 5), and then expands it (step

114 of Fig. 5) because Avinash is concerned with improving the contrast, not with improving the step size of an expanded image.

Col. 4, lines 60 - 65 of Avinash point out that the purpose of Avinash's teaching is to provide for adaptive equalization of the lighter and darker regions of the image while enhancing local contrast.

Regarding claim 7, Applicants point out that Dube does not "determine a strong correlated direction" and perform linear interpolation using neighboring pixels arranged in said strong correlated direction" as the claim requires, but merely interpolates along the fixed directions of 45 degrees and 135 degrees.

With respect to claim 9, Applicants disagree with the examiner's assumption that interpolation reduces the bulge when lines intersect. Interpolation fills in blank pixels or lower-value pixels that are next to higher-value pixels; i.e. interpolation cannot reduce the value of pixels in the bulge and therefore interpolation cannot reduce the bulge.

The rejection of apparatus claims 10 - 19 is respectfully traversed for the reasons set forth above with respect to the method claims.

The rejection of the article of manufacture claims 20 - 31 is respectfully traversed for the reasons set forth above with respect to the method claims.

For the foregoing reasons, allowance of the claims is respectfully solicited.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Eric W. Petraske", written in black ink.

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